

Amendment to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

LISTING OF CLAIMS:

1.-13. (Canceled)

14. (Currently Amended) A write-once optical disc onto which data is recorded in units of clusters, the write-once optical disc ~~inducing comprising:~~

a user data area having at least one defective area, and

a temporary defect management area, ~~wherein including~~ one or more data structures for updating defect management ~~are recorded in the temporary defect management area~~, and each data structure performs update separately, wherein

each of the data structures includes at least one not-defective cluster in which a defective area list and structure information are included,

the defective area list includes entries for ~~the at least one or more defective areas~~ area in the user data area of the optical disc,

the entries in the defective area list of each data structure have been sorted in accordance with information of defective areas ,

the structure information is arranged in a last cluster of each data structure, and

the structure information includes ~~a plurality of plural~~ pieces of position information that indicate positions of clusters each of which ~~includes constitutes~~ a part of the defective area list.

15. (Currently amended) The optical disc of Claim 14, wherein

the data structure is composed of a plurality of clusters including a defective cluster,

the defective area list is written into clusters such that the defective area list is divided into a first area of clusters preceding the defective cluster and a second area of clusters succeeding the defective cluster, and

a first piece of position information that indicates a last cluster in the first area is, in the structure information, adjacent to a second piece of position information that indicates a starting cluster in the second area.

16. (Currently Amended) A recording apparatus for writing a defective area list onto a write-once optical disc onto which data is recorded in units of clusters, the optical disc including a data user area having at least one defective area, the recording apparatus comprising:

a generating unit configured to generate the defective area list and structure information; and

a writing unit configured to write a data structure, which includes the generated defective area list and structure information, into at least one cluster in a temporary defect management area, wherein

the defective area list includes entries for the at least one or more defective areas-area in the user data area of the optical disc,

the structure information is arranged in a last cluster among clusters of the data structure, and

the structure information includes a ~~plurality of plural~~ pieces of position information that indicate positions of clusters each of which ~~includes~~ constitutes a part of the defective area list,

when the structure is updated, the generating unit sorts entries in the defective area list in the data structure in accordance with information of defective areas, and

the data structure written into said at least one cluster in the temporary defect management area by the writing unit is composed of clusters that are not defective.

17. (Previously Presented) The recording apparatus of Claim 16 further comprising a verifying unit configured to verify whether or not a cluster A into which a defective area list was written is a defective cluster, wherein

if the cluster A is verified to be a defective cluster, the writing unit performs a retry to write the defective area list into a cluster B that succeeds in position the cluster A,

during the retry, the defective area list is written such that the defective are list is divided into a first area of clusters preceding the defective cluster and a second area of clusters succeeding the defective cluster, and

the generating unit arranges a first piece of position information that indicates a last cluster in the first area and a second piece of position information that indicates a starting cluster in the second area, in the structure information such that the first piece of position information is adjacent to the second piece of position information.

18. (Currently Amended) A reading apparatus for reading a defective area list from a temporary defect management area recorded-on-included in a write-once optical disc onto which data is recorded in units of clusters, the optical disc including a data user area having at least one defective area, wherein

one or more data structures for updating defect management are recorded in the temporary defect management area, and each data structure performs update separately,

each of the data structures includes a defective area list and structure information,

each defective area list includes entries for the at least one or more defective areas area in the user data area of the optical disc,

the entries in the defective area list of the data structure have been sorted in accordance with information of defective areas,

the structure information is arranged in a last cluster among clusters of the data structure, and

the structure information includes ~~a plurality of plural~~ pieces of position information that indicate positions of clusters each of which ~~includes constitutes~~ a part of the defective area list,

the reading apparatus comprising:

a reading unit configured to extract the structure information from the last cluster of the data structure and read out the defective area list from the optical disc onto a memory in accordance with the ~~plurality of plural~~ pieces of position information;

a holding unit configured to hold the defective area list read out onto the memory; and

an accessing unit configured to, if a high-order apparatus has instructed to access a defective area that is indicated by the defective area list, access a spare area corresponding to the defective area, in place of the defective area.

19. (Currently Amended) A recording method for writing a defective area list onto a write-once optical disc onto which data is recorded in units of clusters, the optical disc including a data user area having at least one defective area, the recording method comprising the steps of:

generating the defective area list and structure information; and

writing a data structure, which includes the generated defective area list and structure information, into a temporary defect management area, wherein

the defective area list includes entries for the at least one or more defective areas area in the user data area of the optical disc,

the structure information is arranged in a last cluster among clusters of the data structure, and

the structure information includes a ~~plurality of plural~~ pieces of position information that indicate positions of clusters each of which ~~includes~~ constitutes a part of the defective area list,

when the data structure is updated, ~~the said generating step~~ sorts entries in the defective area list in the data structure in accordance with information of defective areas, and

the data structure written into said at least one cluster in the temporary defect management area in ~~the said~~ writing ~~step~~ is composed of clusters that are not defective.

20. (Currently Amended) The recording method of Claim 19 further comprising: ~~the step of~~

verifying whether or not a cluster A into which a defective area list was written is a defective cluster, wherein

if the cluster A is verified to be a defective cluster, ~~the said~~ writing ~~step~~ performs a retry to write the defective area list into a cluster B that succeeds in position the cluster A,

during the retry, the defective area list is written such that the defective area list is divided into a first area of clusters preceding the defective cluster and a second area of clusters succeeding the defective cluster, and

~~the said generating step~~ arranges a first piece of position information that indicates a last cluster in the first area and a second piece of position information that indicates a starting cluster

in the second area, in the structure information such that the first piece of position information is adjacent to the second piece of position information.

21. (Currently Amended) A reading method for reading a defective area list from a temporary defect management area included in a write-once optical disc onto which data is recorded in units of clusters, the write-once optical disc including a data user area having at least one defective area, wherein

one or more data structures for updating defect management are recorded in the temporary defect management area, and each data structure performs update separately,

each of the data structures includes a defective area list and structure information,

the defective area list includes entries for the at least one or more defective areas area in the user data area of the optical disc,

the entries included in the defective area list of each data structure have been sorted in accordance with information of defective areas,

the structure information is arranged in a last cluster among clusters of the structure, and

the structure information includes ~~a plurality of~~ plural pieces of position information that indicate positions of clusters each of which ~~includes~~ constitutes a part of the defective area list,

the reading method comprising ~~the steps of~~:

extracting the structure information from the last cluster of the data structure and reading out the defective area list from the optical disc onto a memory in accordance with ~~the plurality of~~ plural pieces of position information;

holding the defective area list read out onto the memory; and accessing, if a high-order apparatus has instructed to access a defective area that is indicated by the defective area list, a spare area corresponding to the defective area, in place of the defective area.

22-23. (Canceled)